

Quiz

5.1-5.3 ~~Wednesday~~

Thursday

5-3 Dividing Polynomials

Poly
Mono

$$\frac{5a^2b - 15ab^3 + 10a^3b^5}{5ab}$$

$$\frac{5a^2b}{5ab} - \frac{15ab^3}{5ab} + \frac{10a^3b^5}{5ab}$$

$$a - 3b^2 + 2a^2b^4$$

Poly
Binomial

$$\begin{array}{r} 24 \\ 5 \overline{)120} \\ \underline{-10} \downarrow \\ 20 \\ \underline{-20} \\ 0 \end{array}$$

$$\begin{array}{r} 30 \frac{3}{5} \\ 5 \overline{)153} \\ \underline{-15} \\ 03 \\ \underline{-0} \\ 3 \end{array}$$

ex:

$$\frac{3y^3 - 5y^2 + y - 6}{y-2}$$

$$\begin{array}{r} \text{Subtract } -3y^3 + 6y^2 \\ \text{---} \\ y^2 + y \\ \text{---} \\ -y^2 + 2y \\ \text{---} \\ 3y - 6 \\ \text{---} \\ -3y + 6 \\ \text{---} \\ 0 \end{array}$$

ex:

Missing a term, you need a place holder

$$\begin{array}{r} 4x^4 - 19x^3 + 5x + 1 \\ 4x - 3 \overline{) } \\ \underline{4x^4 - 19x^3 + 0x^2 + 5x + 1} \\ -4x^4 + 3x^3 \\ \hline -16x^3 + 0x^2 + 5x + 1 \\ +16x^3 + 12x^2 \\ \hline -12x^2 + 5x + 1 \\ +12x^2 + 9x \\ \hline -4x + 1 \\ +4x + 3 \\ \hline -2 \end{array}$$

$x^3 - 4x^2 - 3x - 1 + \frac{-2}{4x-3}$

Synthetic Division

where "x - c" is the divisor

ex:

$$\begin{array}{r} 3y^3 - 5y^2 + y - 6 \\ y - 2 \end{array}$$

$$\begin{array}{r|rrrr} 2 & 3 & -5 & 1 & -6 \\ & \downarrow & 6 & 2 & 6 \\ \hline & 3 & 1 & 3 & 0 \end{array}$$

$3y^2 + y + 3$ Remainder

Do:

$$\begin{array}{r} 2t^4 + 5t^3 - 4t^2 + 9 \\ t + 3 \end{array}$$

Place holder

$$\begin{array}{r|rrrrr} -3 & 2 & 5 & -4 & 0 & 9 \\ & \downarrow & -6 & 3 & 3 & -9 \\ \hline & 2 & -1 & -1 & 3 & 0 \end{array}$$

$2t^3 - t^2 - t + 3$

ex:

$$\begin{array}{r} 4x^4 - 19x^3 + 5x + 1 \\ 4x - 3 \end{array}$$

Factor out 4 $\left(x - \frac{3}{4}\right)$

$$\begin{array}{r|rrrrr} \frac{3}{4} & 4 & -19 & 0 & 5 & 1 \\ & \downarrow & 3 & -12 & -9 & -3 \\ \hline & 4 & -16 & -12 & -4 & -2 \end{array}$$

$\frac{1}{4}(4x^3 - 16x^2 - 12x - 4 + \frac{-2}{x - \frac{3}{4}})$

$x^3 - 4x^2 - 3x - 1 + \frac{-2}{4x-3}$

~~GW (check for understanding)~~

p236-237

15, 33 (long), 37, 41, 43, (synthetic)